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**INVESTIGATING THE ADOPTION OF SUSTAINABLE GREEN INITIATIVES IN SCOTTISH FOOD AND DRINK SMEs**

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## **Abstract**

Increasing concerns towards environmental issues (transportation emissions, global warming, depletion of natural resources) in today's global economy has resulted in the need for businesses to be more environmentally friendly and act in an environmentally responsible manner. Like most developed nations, the UK has placed significant importance on the need for more sustainable business operations. However the smooth adoption and implementation of these green practices by businesses is slow due to challenges such as lack of awareness, cost, resourcing, legislation, and incorporation into existing business processes. Green practices are often assumed by SMEs to involve significant expense, and in some cases even unaffordable. Particularly during the recent time of recession, focus has been on keeping SMEs afloat rather than making substantial investment in what are perceived to be "nice to have" green initiatives. SMEs sometimes also cite lack of knowledge of how to implement green initiatives and lack of support for such activity.

The focus of this research is Scottish food and drink sector, which plays a vital role contributing nearly £10bn yearly to the economy. However, this positive contribution of the sector to the economy sits in tension with the fact it also generates a substantial amount of waste (estimated to generate 2 million tonnes of waste annually), and thus has costly negative impacts on the environment.

This paper forms part of a larger doctoral study on green supply chain initiatives in Scottish SMEs. Specifically, the research has been set up to explore the various factors motivating and inhibiting the adoption of green initiatives by food and drink businesses. In this paper, the focus is on a review of the literature that was undertaken to establish some initial motivators and inhibitors among SMEs across a range of sectors. These were then explored further in a pilot study among six small firms in the food and drink sector Scotland. This qualitative pilot study was undertaken using semi-structured interviews with the owner-managers. Arising from the findings of the pilot study, a scale of "green-ness" was devised to chart the extent to which the firms have innovated by incorporating green practices into their business processes. A more extensive study is now being designed to test and refine the scale with a view to creating a model to assist small businesses in their planning and strategizing in relation to introducing green practices. The paper reports on the early stages of this research, including the pilot study and the creation of the "green-ness" scale.

**Keywords:** Sustainability, Green, Environment, Food and Drink, Green supply chain management, SMEs

## 1 Introduction

Sustainability is defined by (Linton et al. 2007) as “ using resources to meet the needs of the present without compromising the ability of future generations to meet their own needs”. The Global introduction to sustainability concerns started in the 1970’s, with the need to integrate environmental concerns with business strategy. The late 1980’s saw a shift to research in organizational green and the internalization of the concept of sustainability by businesses to their core values (Starik and Marcus 2000; Winn 1995), by the 1990’s, the sustainability focus became; Green marketing, with the introduction of preventative green management and production measures (Schmidheiny 1992; Porter and van der Linde 1995; Sharma et al. 2010; Teixeira et al. 2012), by the 21<sup>st</sup> century sustainability had evolved to be included into the activities of the supply chain, integrating issues that related to supplier selection, product life cycle, packaging and recycling, regulations and compliance, waste minimization etc (Starik and Marcus 2000). This integration of sustainability thinking in the supply chain is popularly referred to as “Green supply chain management”. Green sustainability is an important issue evidenced by the on-going number of prominent conferences and events for the last 50 years or so that relate to world business sustainability for example in 1968 the UN Economic and Social council held a summit on “Environmental issues in global consciousness” and in 2013 the UN conference was on “ the reduction of greenhouse gas emissions.

The focus of this study is SMEs in the Scottish food and drink sector; the study chose this sector because it holds a vital economic importance to the UK economy and international supply chain. Despite this positive attribute, total food waste in the UK is estimated at around 16million tonnes, however this research is narrowed to focus on Scottish food and drink SMEs, this sector is noted to produce over 2 million tonnes of food waste annually (Food and Drink Report 2013). Individually food and drink SMEs may not have a huge impact, but collectively they play a vital role within the industry and are highly critical to many large supply chains as well as to achieving industry sustainability and meeting the green ambition target. Improving the business environmental sustainability enhances the business resilience in the long-term and also mitigates against shortage risks along the supply chain. This is of particular interest to the research as it seeks to investigate how the food and drink companies are implementing green initiatives within their business activities to reduce the environmental impact generated by the industry as a whole.

This paper presents the findings from a pilot undertaken as part of a pilot study of 6 small businesses in the Scottish food and drink sector. The overall aim of the pilot was to explore the case respondents knowledge on the adoption of green practices within their businesses. The paper begins by considering existing literature in the field, followed by a description of the context and approach of the study, the key findings are presented and discussed and ends with a conclusion on the future considerations for further work. Though the paper and main study is focused on Scottish food and drink, the need for greener and sustainable activities is faced by most industries; the findings should therefore be of interest to other fields working on SMEs.

## 2 Relevant literature

The increasing focus on supply management has resulted in an integration between green environmental issues and supply management, hence the use of terms like green supply chain management (GSCM), which focuses on ever increasing concerns on how to maximize value from existing business supply chains while yet minimizing its environmental impact in an efficient and sustainable way (Bowen et al. 2001). The green component to supply chain enhances the influence between the environment and supply chain management (Zhu et al 2008) Some examples of GSCM practices include; waste reduction and packaging, assessing suppliers on their environmental performance, eco-friendly products, and reducing Co2 emissions arising from goods transportation. Other initiatives that also seek to address environmental issues at the source include the use of an environmental management system by the company for example lean management practices, kaizen, ISO 14001 etc).

It has been noted that despite the popularity and interest generated within this field there still exists a lack of clarity and standards on issues of sustainability (Berns et al. 2009). Also, of particular interest to the context of this research is the acknowledgment of the gap between implementing green initiatives in practice by businesses, for example an emerging barrier to the implementation of green practices is “green washing”, this term is associated with companies who pretend to support and

advocate for green sustainability without actually making any real commitments within their business (Sarkis et al. 2011; Gnoni et al. 2011; Bergenwall et al. 2012; Liu et al. 2012). This research attempts to contribute to this gap with the emphasis on identifying green initiative issues and subsequently investigating the relevant and appropriate strategies to overcome these inhibitors.

### **3 The Research Context and Approach: exploratory case studies**

The overall aim of this PhD research is to conduct an empirical assessment of on-going green supply chain initiatives adopted by the Scottish food and drink SMEs, evaluating the extent to which these SME's are involved in incorporating green environmental management practices into their business supply chains, as well as assessing the impact of the adoption. However, this paper is confined to the specific aim of assessing the awareness of adopting green practices by food and drink businesses. The objectives in line with this aim were to:

- Assess the awareness of green practices to the businesses in the sector
- Identify the forms of green initiatives adopted by the SMEs
- Identify the motivators and barriers to green efforts by SMEs in the Scottish food and drink sector

The objectives were met by conducting an exploratory pilot of 6 case studies within the sector. A qualitative method is adopted for the study to enable an in-depth approach to investigating the adoption of green initiatives by Scottish food and drink SMEs. Qualitative research studies have been noted to seek to illuminate, comprehend and explore situations, without manipulating the phenomenon of interest (Carter and Easton 2011). The methodology adopted by the study draws on the design of a multiple case study; this is representative of the research case (multiple food and drink SMEs) and the issue of focus (the adoption of green initiatives). This design will enable the research illustrate various perspective on the issue from looking at multiple case studies and doing cross case analysis (i.e. the difference between companies investigated), this is a form of qualitative research design that focuses on issues with individual cases, as it builds on a detailed understanding of the case through multiple sources of information such as interviews, documents and reports (Yin 2003).

Interviews served as the main source of data for the pilot, the respondent's details were obtained from the UK food and drink directory called "Food and Drink Federation" which contains updated information of companies within the industry ([www.fdf.org.uk](http://www.fdf.org.uk)). The interviews were semi-structured, this was found appropriate due to the individual nature of the respondent firms and the potential of this method to generate rich data for the research to explore. Interview topics and questions include details of the company, annual income and expenditure, knowledge and awareness of green initiatives, decisions to foster such initiatives, existing initiatives carried out by the company, drivers and barriers to such green initiatives. Interviews were digitally recorded and transcribed by the researcher. The data was further analysed by identifying key themes of interest, grouping the similarities and dissimilarities and carrying out a comparison between the findings and existing literature.

Six companies are investigated in this study, table 1, presents some of the information about these companies with particular reference to their size, activity, green awareness level and adopted green practices. At the moment, the research maintains a wide scale using the food and drink sector, though the pilot was mainly focused on businesses based in North- east Scotland, the research is still being shaped and yet to be narrowed down to specific sector (i.e. producers, manufacturers, wholesalers, retailers). The researcher has maintained this broad sector outlook at the moment to see where the study is likely to get the most responses.

**Table 1:** Characteristics of case companies

Characteristics	Company A	Company B	Company C	Company D	Company E	Company F
Market	Bar and Restaurant	Bar	Meat, Game and Poultry production	Bar and Restaurant	Alcoholic Beverages production	Organic Fruit and Vegetable Farm
Employees	40	5	2	13	5	7
Annual turnover	450- 500K	350-450K	100-200K	200-300K	250-350K	100-200K
Awareness of Green	Low	Low	Low	Medium	High	High
Green Initiatives	Recycling	Recycling	Recycling	- Recycling -Low food miles -Supplier selection	-Product redesign, -Low energy equipment	-Recycling -Low logistics miles

Results obtained from the pilot are presented in the following sections.

## 4 Findings and Discussion

The result obtained from the empirical analysis are presented and discussed in this section.

### 4.1 Green Awareness

All case companies acknowledged to be aware of green initiatives, however the level of awareness differed. For instance; company A, B and C for noted the popularity of green initiatives and mostly associated it with eco-marketing and adverts but when asked to elaborate with details of practices they became highly unfamiliar.

### 4.2 Motivators and On-going practices

Since the case companies confirmed their awareness of green initiatives, the study went further to investigate the factors fostering the adoption of such green practices and the extent to which these practices are adopted and deemed important by the business owners. Zhu and Sarkis (2006) found that firms in different industries have different drivers and practices, this clearly suggests that drivers and barriers to green are likely to be industry specific and cannot be generalised, thus the need for the study to gather industry specific data from food and drink businesses on the motivators to green initiatives. The study adopts a narrative style in presenting the findings from the respective SMEs.

Company A: is a bar and restaurant business with over 40 employees, the key driver for the firm towards green initiatives here is legislation. At the moment the initiatives adopted is recycling which is restricted to glass and cardboards, this is attributed to the challenge of costs, according to the respondent *"the cost of having to allocate different recycling to different companies and different rates requires time, effort and money. I remember the days when you got money for recycling stuff, but it's all changed so much now"*. Despite this the owner notes a generous amount of waste is generated by

their process, and is looking to adopt more particularly in the areas of food waste minimization and more energy efficient practices. The company currently has no green initiative strategy or programs in place for the business but acknowledges the importance of green initiatives and looks to do better in the future.

Company B is also driven by legislation to recycle. The particular green practice adopted here is recycling cardboards, though they generate a huge volume of bottles due to the nature of the business they are not involved in bottle recycled, however they agree it is important by stating “ *I think it would be good to recycle our glassware but we need to have a system as well that is easy to recycle*”. Other areas they would like to improve and adopt more efficient processes include cutting down on their water use and saving on energy.

Company C: Is not driven by any particular reason to adopt green initiatives, the business is however involved in recycling on occasion but not very consistent. The owner stresses on the need to keep the business afloat and stay profitable and feels including other activities will have cost implications that the business cannot afford to bear and stay profitable.

Company D: is inclined to adopt green initiatives as a business value, the business owners strongly supports the relevance of green initiatives as a means of reducing their impact as a business on the environment. Stating, “ *I think the food and drink industry is very wasteful and very difficult to manage*”. They are currently involved in lowering carbon-footprints by procuring products from local environmentally friendly suppliers, recycling glass and minimizing the travel miles of the business in general.

Company E: attributes their desire to be green to the need to meet their customers demand, to improve on their process, quality and the efficiency of the business stating “ *We work with our producers to make sure that we try to be as green as we can, we also source locally to reduce our carbon-footprint. We also try to ensure we produce in the most efficient way by recycling water, which improves our energy efficiency, and further promote and encourage a paper-free environment*”. The owner further associated the efficiency of the business to reducing costs stating “ *We now use lightweight glass, compare to 5 years ago where it was heavier glass, this means we can get more on a pallet, and we now ship more efficiently than we did 5 years ago, efficiency for us means saving money in many ways, an initiative that makes glass lighter actually saves a lot of money*”. The business owner fully supports the adoption of green initiatives and finds it to be an advantage for businesses in today's competitive environment.

Company F: Is involved in an organic business and strongly supports the relevance of green initiatives. The main driver is the influence of customer demand for organic produce, the business has a relatively low environmental impact because it is solely organic, and also is actively involved in recycling plastic boards. Waste is kept to a minimal by its re-use as fertilizers on farms, and transportation miles are kept low as a means of reducing the carbon-footprint.

The narrative analysis and construction from interviewees enabled the study identify themes which stand out as motivators for the SMEs to adopting green initiatives presented in figure 1. In enabling and facilitating these green initiatives the most prominent activity seems to be recycling, with the exception of company E which seems to be looking for (green) best practices to add on, the other companies are less active towards the adoption of green initiatives, the study identified some difficulties they encounter towards actively adopting green initiatives.

#### **4.3 Inhibitors**

An observation from this study indicates that there seems to be more inhibitors to the adoption of green initiatives for businesses in the food and drink SMEs than there are motivators. The factors are summarised as inhibitors in figure 1 and discussed below.

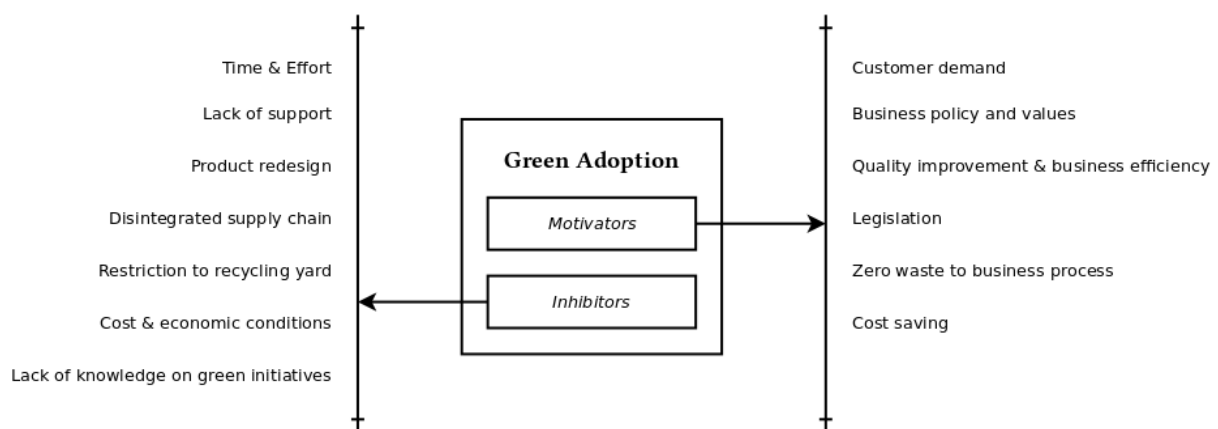
All companies investigated identified with some form of challenge. They acknowledged that to be active in greening their businesses they would need to allocate additional resources to facilitate the development of such green practices and they were not certain the benefits of such would outweigh the costs associated and the effort required. An example of such a view is seen in company D “ *if I focused my energy on none business related activities, nothing will get done to my standard*”, on this

Company A states “ *I know we generate a lot of food waste and I should probably look into food recycling but I just have not been able to do it*”, while Company B agrees stating “ *it is time consuming for us and it will also cost more*” the companies further stress that they are not getting the right form of support or encouragement from government legislation.

Costs was identified as a major barrier, the cost of going green is associated with costs among the SMEs, the study found that the businesses are happy to adopt green initiatives if it cost nothing, the companies confirmed they encountered costs to recycling and the inconvenience of needing to recycle with different companies for different products such as paper, plastics, wood, and glass was even more frustrating and a big obstacle to their active engagement for example, company B stated “ *it would be nice to make sure that we are doing good to the environment as a business and our waste was not going to landfill, but not if that comes at an extra cost*” .

Also, the restriction to recycle yards makes it even more difficult, Company D states, “commercial vehicles are not allowed in the recycling yard, only residents, so even though we pay the business rates, we are not given access and get penalized when we use the yard”. Company E, was involved in re-designing their product to be more eco-friendly and confirms that a major challenge they experienced was disruption to their business production as a result they re-design every 10 years in-order to avoid major disruptions.

Five companies out of the six (6) were not active members of trade associations, there was therefore a general sense of lack of knowledge on the subject of green practices and on how their employees get trained to assist in implementing such environmental practices, there was a general trend by the interviewees to indicate one-off trainings or illustrations with workers on how to recycle glass. With the exception of company E who found it immensely useful to be involved with associations and training programmes for its staff as well noting “ *we strive to be aware of how things can be improved, and the objective for us it to be efficient*”. From this analysis of inhibitors, we can present the following emerging themes illustrated in figure 1.



**Figure 1:** Motivators and Inhibitors to green adoption

The respondents acknowledged awareness of green initiatives but also associated adopting green to high cost that would impact their business profitability and as a result this makes it difficult to adopt. This is not strange as SMEs are noted to face greater obstacles when adopting new innovative initiatives, this is partly associated to the costs of greening, costs associated to training, implementation, environmental regulations, re-design, energy and logistics (Hassini et al. 2012; Revell and Blackburn 2007), they further struggle with issues such as a lack of ample resources, green knowledge and expertise and time constraints (Worthington 2012). SMEs clearly do not have sufficient understanding of how to adopt green initiatives and this poses a huge barrier to sustainability of green practices within the food and drink sector.

#### 4.4 Further research

The findings from the pilot have identified areas that will be further investigated in the main data



collection of the study, since the pilot was merely used to gauge the receptiveness of respondents within the sector and gain a sense of issues relating to the adoption of green initiatives that might exist in the sector. Previous studies have either examined SMEs from diverse industries (Banomyong and Supatn 2011) or conducted comparative studies between large businesses and SMEs (Islam and Karim 2011) but there is still a limitation of work where green sustainability practices of SMEs and particularly for food and drink (Lee et al. 2012; Bourlakis et al. 2013) and none to the best of our knowledge. This paper sheds some light towards this gap, it has investigated the micro and small firms in the food and drink chain and identified the motivators and inhibitors to the firms adoption of green practices.

The findings reveal a disparity among the firms on the forms of practices they are actively engaged in for instance some patterns have emerged in terms of the on-going practices between these firms, which is highly influenced by some of the inhibitors identified. There is a mixture of both micro and small firms that seem to be more inclined and consistent with on-going green practices mostly influenced by the perception and values of the business owners alongside the need to continuously improve their processes and reduce environmental impact while still maintaining their profitability. The activities of this group goes beyond just recycling and extends into areas of waste minimization, eco supplier selection and reducing Co2 emissions, these are high-level green adopters. Another emerging group is those with very minimal involvement towards green practices, despite their acknowledgment of a generous amount of waste being generated, they are less involved in minimising their impact unless compelled to by legislation, an example of such is one of the companies noted to generate a lot of food waste and despite being aware of food recycling does not implement this as a means to reduce waste. A third group identified is also on the minimal level; they recycle products such as bottles and papers but are not interested in doing more. There are also those with a low awareness level of what green initiatives are and are likely affected by what seems to be a lack of access to information on what they can do within their processes.

Clearly, the data gathered was for exploratory purposes but the findings have led the study to generate a scale, which will explore the level of greenness of these business. The scale could go from low level to high or vice-versa, however the study does not have sufficient data to label what falls in-between the scale as illustrated in the figure 2.

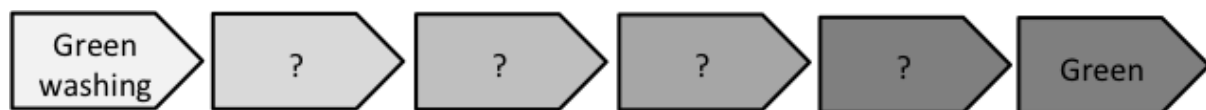


Figure 2: Emerging scale of Greenness among SMEs

Future research will look into expanding this scale and make it more explicit to understand the distinctions between the various participatory levels of adopting green (possible theories to be explored include Rogers “theory of diffusion of innovation”). We also include green washing as a label that might likely be investigated. Green washing as a term emerges from secondary data in literature (Bergenwall et al. 2012; Liu et al. 2012), however this study has not come across any companies from the pilot that fall under this label and simply acknowledges its existence from literature.

## 5 Conclusion

The overall objective of this research was to investigate the adoption of green practices in the food and drink SMEs, though the pilot study is presented in this paper, it has been possible to identify some motivators and inhibitors to adoption. The study involved preliminary data collected from six-micro and small firms. The conclusions drawn from this pilot study are that:

- Food and drink businesses are inclined towards the adoption of green practices as a notion rather than in actual practice.

- Majority of the companies are involved in green practices on a passive activity basis, the most prominent form of practice is recycling which is mostly limited to paper, wood, plastic and bottle recycling and not necessarily to waste generated within the core business activity for example food waste recycling.
- There is clear evidence of both internal barriers such as (lack of knowledge/ access to information, trainings, cost, and time constraints) and external barriers such as (lack of support, resources and cost).
- The findings indicate that awareness on environmental issues has not yet been translated into sustainable green practice adoption.
- A scale of greenness has emerged from the findings, which will explore and expand in future research on activity levels of adoption. Companies will be categorised according to labels of on-going practices.

The limitation of this study is it is only exploratory and was conducted based on very preliminary data, this however serves as a sound basis for expansion into future research as the doctoral study progresses.

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